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ABSTRACT

DUE TO THE PROBLEMS INHERENT IN USING A NORM-REFERENCE TEST SUCH AS THE IOWA TEST OF BASIC SKILLS (ITBS) TO DETERMINE PUPIL ACHIEVEMENT, A COMPARISON OF ITBS WITH THE INDIVIDUALLY PRESCRIBED INSTRUCTION (IPI) CONTINUUM AND PLACEMENT TESTS WAS UNDERTAKEN. THIS YIELDED THE FOLLOWING CONCLUSIONS: OF THE 136 ITEMS ON TEST 1-A ARITHMETIC CONCEPTS, 14 ITEMS ARE NOT INCLUDED IN THE IPI CONTINUUM AND 5 ITEMS REQUIRE TWO SKILLS FOR MASTERY; OF THE 96 ITEMS ON TEST 2-A ARITHMETIC PROBLEM SOLVING, 1 ITEM IS NOT INCLUDED IN THE IPI CONTINUUM AND 5 ITEMS REQUIRE TWO SKILLS FOR MASTERY; OF THE 418 SKILLS IN THE IPI MATHEMATICS CONTINUUM, 108 OR 26% ARE TESTED BY THE ITBS; AND OF THE 147 SKILLS TESTED BY THE IPI PLACEMENT TESTS, 41 SKILLS OR 27.9% ARE TESTED BY THE ITBS. (AUTHOR)

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REPORT

OF

COMPARISON

BETWEEN

IOWA TEST OF BASIC SKILLS-FORM 4

AND

IPI CONTINUUM 1967-68

JoAnn Weinberger
November, 1968

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Due to the problems inherent in using a norm-referenced test such as the Iowa Test of Basic Skills (ITBS) to determine pupils achievement, a comparison of ITBS with the IPI continuum and placement tests was undertaken.

This comparison was done by two independent raters (Alice Hosticka and Nancy Unks) and reconciled by a third (JoAnn Weinberger) when necessary. Based on this comparison, the following conclusions are in order:

1. Test 1-A Arithmetic Concepts: Of the 136 items in this test, 14 items are not included in the IPI continuum and 5 items require two skills for mastery.

2. Test 2-A Arithmetic Problem Solving: Of the 96 items in this test, 1 item is not included in the IPI continuum and 5 items require two skills for mastery.

3. Of the 418 skills in the IPI Mathematics Continuum, 108 or 26% are tested by the ITBS.

4. Of the 147 skills tested by the IPI Placement Tests, 41 skills or 27.9% are tested by the ITBS. The 41 skills are tested by 53 items.

TABLE I.

IPI - ITBS COMPARISON BY LEVEL

IPI LEVEL	NUMBER OF IPI SKILLS	NUMBER SKILLS TESTED BY ITBS	% IPI SKILLS TESTED BY ITBS
A	13	0	0
B	36	8	22
C	46	10	22
D	79	21	26.5
E	86	34	39.5
F	72	26	36
G	53	10	18.8
H	33	0	0
TOTAL:	418	109	26

NOTE: The 10 items which require mastery of more than one IPI skill are not included this summary table.

TABLE II.

IPI - ITBS COMPARISON BY
LEVEL BREAKDOWN OF ITEMS

IPI LEVEL	NUMBER OF ITBS ITEMS		
	A-1 Arithmetic Concepts	A-1 Problem Solving	Combined
A	0	0	0
B	7	0	7
C	9	3	12
D	22	18	40
E	40	8	48
F	30	52	82
G	9	9	18
H	0	0	0
Unclassified	14	1	15

NOTE: The 10 items which require mastery of more than one IPI skill are not included this summary table.

TABLE III.

IPI - ITBS COMPARISON BY AREA

IPI AREA	LEVELS REPRESENTED IN ITBS-FORM 4	I T B S ITEMS		
		A-1	A-2	Combined
Num	B-F	13	-	13
PV	B-E	14	-	14
ADD	B-E	5	1	6
SUB	D-F	3	2	5
MULT	E-G	4	3	7
DIV	D-G	9	8	17
COP	C-G	3	43	45
FRAC	C,E-G	26	15	41
M	C-D, F	5	16	21
T	E-F	9	1	10
SOM	C-E	8	-	8
G	B, E-G	9	-	9
ST	C-F	9	1	10

NOTE: The 10 items which require mastery of more than one IPI skill are not included this summary table.

TABLE IV.

IPI PLACEMENT TESTS - ITBS COMPARISON

IPI			NUMBER OF IPI PLACEMENT TESTED SKILLS REPRESENTED BY ITBS ITEMS	ITBS FORM 4
AREA	LEVEL	NO. OF SKILLS IN PLACEMENT TEST		NUMBER OF ITEMS CORRESPONDING TO SKILLS ON PLACEMENT TESTS
NUM	B	2	1	1
	C	4	1	1
	D	4	1	1
	E	2	1	2
	F	3	1	2
	G	3	-	-
PV	B	2	1	1
	C	2	-	-
	D	3	-	-
	E	2	2	4
	F	2	-	-
	G	1	-	-
ADD	B	3	-	-
	C	3	-	-
	D	2	-	-
	E	2	1	1
	F	2	-	-
	G	3	-	-
SUB	C	2	-	-
	D	2	1	1
	E	2	1	2
	F	1	1	1
	G	3	-	-
MULT	D	3	-	-
	E	3	1	3
	F	3	1	1
	G	2	-	-
DIV	D	3	-	-
	E	2	2	5
	F	3	1	1
	G	3	2	2
COP	C	1	-	-
	D	1	1	1
	E	1	-	-
	F	1	-	-
	G	1	-	-

TABLE IV. (cont'd)

IPI AREA	IPI LEVEL	IPI NUMBER OF SKILLS IN PLACEMENT TEST	NUMBER OF IPI PLACEMENT TESTED SKILLS REPRESENTED BY ITBS ITEMS	ITBS FORM 4 NUMBER OF ITEMS CORRESPONDING TO SKILLS ON PLACEMENT TESTS
FRAC	B	1	-	-
	C	2	-	-
	D	2	-	-
	E	2	2	2
	F	3	1	3
	G	3	2	3
M	B	2	-	-
	C	2	2	2
	D	2	2	2
	E	2	-	-
T	B	2	-	-
	C	1	-	-
	D	3	-	-
	E	4	2	2
	F	2	1	1
SOM	B	1	-	-
	C	2	-	-
	D	3	2	2
	E	4	1	1
	F	1	-	-
GEOM	B	1	1	1
	C	1	-	-
	D	3	-	-
	E	5	1	1
	F	6	1	2
	G	5	2	2
TOTALS:		147	41	53

NOTE: The 10 items which require mastery of more than one IPI skill are not included this summary table.

TABLE V.

ITBS FORM 4 - TEST A-1: ARTHIMETIC CONCEPTS

Comparison with the IPI curriculum made by Alice Hosticka. Revised by Nancy Unks and Jo Ann Weinberger.

September 5, 1968

PUPIL SHOULD BE ABLE TO DO ITBS NUMBER:	IF HE HAS STUDIED IPI SKILL:
1	D-PV-2
2	B-PV-1
3	E-Num-4
4	B-Som-4 and C-Add 3
5	B-Add-6
6	B-Num-9
7	B-Add-11
8	C-Mon-2
9	B-Num-7
10	E-Time-2
11	E-Time-1
12	D-SOM-3
13	-------
14	D-Mon-4
15	D-Num-3
16	E-PV-3
17	C-PV-3
18	E-Time-9
19	D-PV-2
20	B-Geom-1
21	D-Cop-5
22	D-Mon-1
23	E-Time-1
24	D-Div-1
25	C-Fract-2
26	B-Add-9
27	C-Fract-2
28	D-Add-5
29	C-Add-2
30	E-COP-2
31	D-PV-1
32	E-Fract-2
33	D-SOM-2
34	E-Div-5
35	E-PV-2
36	D-Div-2
37	E-Num-4
38	E-Fract-1
39	E-PV-1
40	C-ST-1
41	D-Sub-4
42	D-SOM-2
43	E-Div-5
44	C-Mon-1
45	E-SOM-1
46	D-Div-3
47	D-Som-5
48	D-Som-1 and E-Mult-1
49	C-PV-1
50	E-Time-7
51	D-Sub-2
52	F-Num-2
53	F-Mult-4
54	F-Mult-6
55	D-Som-2
56	E-Div-5
57	D-Mon-5
58	E-Fract-3
59	E-Time-1
60	C-Num-6
61	E-Fract-6
62	E-Num-3
63	E-COP-5
64	D-ST-2
65	F-Fract-10
66	------
67	------
68	E-ST-2
69	F-Fract-1
70	F-Div-3
71	E-Fract-1
72	D-SOM-1
73	F-Fract-5
74	F-ST-1
75	G-Geom-7
76	E-Frac-4
77	F-Frac-8
78	F-Num-2
79	F-G-8
80	E-Frac-4
81	F-T-1
82	F-Frac-13
83	F-G-2
84	F-Frac-5
85	F-Frac-10
86	F-Frac-2
87	F-PV-3
88	E-Frac-5
89	E-SOM-1 and F-Div-2

ITBS FORM 4 - TEST A-1: ARITHMETIC CONCEPTS

PUPIL SHOULD BE ABLE TO DO ITBS NUMBER:	IF HE HAS STUDIED IPI SKILL:
90	D-SOM-3 and F-Frac-3
91	E-Num-3
92	-------
93	F-Frac-10
94	E-Time-9
95	F-Frac-4
96	F-Frac-2
97	E-Num-6
98	G-Frac-3
99	E-PV-5
100	G-Frac-2
101	E-PV-3
102	F-Frac-4
103	E-Mult-11
104	G-Mult-4
105	F-St-2
106	E-SOM-4
107	E-PV-6
108	F-T-4
109	-----
110	-----
111	E-T-4 and E-SOM-5
112	E-Num-8
113	G-Frac-3
114	F-Div-7
115	E-Num-8
116	--------
117	F-ST-2
118	F-Sub-1
119	D-PV-5
120	F-Frac-13
121	F-ST-2
122	G-G-3
123	F-ST-2
124	E-G-9
125	------
126	F-Geom-8
127	G-Geom-5
128	-------
129	-------
130	G-Geom-3
131	-------
132	-------

PUPIL SHOULD BE ABLE TO DO ITBS NUMBER:	IF HE HAS STUDIED IPI SKILL:
133	G-Div-5
134	-------
135	-------
136	E-ST-3

KEY TO ALL IPI AREAS:

Num = Numeration
PV = Place Value
Add = Addition
Sub = Subtraction
Mult= Multiplication
Div = Division
COP = Combination of Processes
Frac = Fractions
M = Money
T = Time
SOM = Systems of Measurement
G = Geometry
ST = Special Topics

TABLE VI.

ITBS FORM 4 - TEST A-2: ARITHMETIC PROBLEM SOLVING

Comparision with the IPI curriculum made by Alice Hosticka. Revised by Nancy Unks and Jo Ann Weinberger.

September 11, 1968

PUPIL SHOULD BE ABLE TO DO ITBS ITEM:	IF HE HAS STUDIED IPI SKILL:
1	C-COP-3
2	C-COP-3
3	D-COP-4
4	D-COP-4
5	D-Mon-6
6	C-COP-3
7	D-Mon-6
8	D-Mon-6
9	F-COP-4
10	F-COP-4
11	D-COP-4
12	D-COP-4
13	D-COP-4
14	D-COP-4
15	D-COP-4
16	D-COP-4
17	D-COP-4
18	D-COP-4
19	D-COP-4
20	D-COP-4
21	D-COP-4
22	D-COP-4
23	F-COP-4
24	F-COP-4
25	F-COP-4
26	F-COP-4
27	D-COP-4
28	F-COP-4
29	F-Mon-2
30	F-COP-4
31	F-Mon-2
32	E-Sub-3
33	F-COP-4
34	E-Div-7
35	F-Mon-2
36	E-Div-7
37	F-COP-4
38	E-Mult-11
39	F-COP-4
40	F-COP-4

PUPIL SHOULD BE ABLE TO ITBS ITEM:	IF HE HAS STUDIED IPI SKILL:
41	---
42	F-Frac-14
43	F-Mon-2
44	F-Mon-2
45	F-Div-8
46	E-Mult-11
47	F-Mult-10
48	F-Div-8
49	F-Frac-14
50	E-Add-6
51	F-Mon-2
52	E-Sub-3
53	F-COP-4
54	F-Frac-14
55	F-Frac-14
56	F-Frac-14
57	F-Frac-14
58	F-Frac-14
59	F-Frac-14
60	F-Mon-2
61	F-Mon-2
62	F-COP-4 and F-Geom-2
63	F-COP-4
64	F-Mon-2
65	G-Frac-5
66	F-COP-4
67	F-Mon-2
68	F-COP-4
69	F-COP-4
70	G-Frac-5
71	F-COP-4
72	F-COP-4 and F-Geom-2
73	G-Frac-5
74	F-COP-4
75	F-Div-8
76	F-COP-4
77	F-Mon-2
78	G-COP-5
79	G-Frac-5
80	F-Frac-14

P. 2: ITBS FORM 4 - TEST A-2: ARITHMETIC PROBLEM SOLVING

PUPIL SHOULD BE ABLE TO DO ITBS ITEM:	IF HE HAS STUDIED IPI SKILL:
81	E-Time-9
82	F-Frac-14
83	G-Div-4 and F-Geom-2
84	F-Div-8
85	F-Mon-2
86	F-COP-4
87	F-Div-8
88	G-COP-5
89	G-COP-5
90	F-Mon-2
91	F-Geom-2 and F-Mon-2
92	F-Geom-2 and F-ST-2
93	G-Div-4
94	G-COP-5
95	F-Frac-14
96	F-ST-2

TABLE VII.

IPI SKILLS WHICH CAN BE TESTED BY ITEMS FROM ITBS FORM 4

ITBS items which require mastery of more than one IPI skill are followed by parentheses containing the additional IPI skill needed.

IPI SKILL		I.T.B.S. Item Test A-1: Arithmetic Concepts	Test A-2: Arithmetic Problem Solving
B-Num	7	9	
	9	6	
B-PV	1	2	
B-Add	6	5	
	9	26	
	11	7	
B-SOM	4	4 (C-Add-3)	
B-Geom	1	20	

IPI SKILL		I.T.B.S. Item Test A-1: Arithmetic Concepts	Test A-2: Arithmetic Problem Solving
C-Num	6	60	
C-PV	1	49	
	3	17	
C-Add	2	29	
	3	4 (B-SOM-4)	
C-COP	3		1, 2, 6
C-Fract	2	25, 27	
C-Mon	1	44	
	2	8	
C-Spt	1	40	

IPI Skill		I. T. B. S. Item Test A-1: Arithmetic Concepts	Test A-2: Arithmetic Problem Solving
D-Num	3	15	
D-PV	1	1, 31	
	2	19	
	5	119	
D-Add	5	28	
D-Subt	2	51	
	4	41	
D-Div	1	24	
	2	36	
	3	46	
D-COP	4		3, 4, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 27
	5	21	
D-Mon	1	22	
	4	14	
	5	57	
	6		5, 7, 8
D-SOM	1	72, 48 (E-Mult-1)	
	2	33, 42, 55	
	3	12, 90 (F-Frac-3)	
	5	47	
D-SpT	2	64	

IPI Skill		I. T. B. S. Item Test A-1: Arithmetic Concepts	Test A-2: Arithmetic Problem Solving
E-Num	3	62, 91	
	4	3, 37	
	6	97	
	8	112, 115	
E-PV	1	39	
	2	35	
	3	16, 87, 101	
	5	99	
	6	107	
E-Add	6		50
E-Subt	3		32, 52
E-Mult	1	48 (D-SOM-1)	
	11	103	38, 46
E-Div	5	34, 43, 56	
	7		34, 36
E-COP	2	30	
	5	63	
E-Fract	1	38, 71	
	2	32	
	3	58	
	4	76, 80	
	5	88	
	6	61	
E-Time	1	11, 23, 59	
	2	10	
	4	111 (E-SOM-5)	
	7	50	
	9	18, 94	81
E-SOM	1	45, 89 (F-Div-2)	
	4	106	
	5	111 (E-Time-4)	
E-Geom	9	124	
E-SpT	2	68	
	3	136	

I. T. B. S. Item

IPI Skill		Test A-1: Arithmetic Concepts	Test A-2: Arithmetic Problem Solving
F-Num	2	52, 78	
F-Sub	1	118	
F-Mult	4	53	
	6	54	
	10		47
F-Div	2	89 (E-SOM-1)	
	3	70	
	7	114	
	8		45, 48, 75, 84, 87
F-COP	4		9, 10, 23, 24, 25, 26, 28, 30, 33, 37, 39, 40, 53, 63, 66, 68, 69, 71, 74, 76, 86
F-Fract	1	69	
	2	86, 96	
	3	90 (D-SOM-3)	
	4	95, 102	
	5	73, 84	
	8	77	
	10	65, 85, 93	
	13	82, 120	
	14		42, 49, 54, 55, 56, 57, 58, 59, 80, 82, 95
F-Mon	2		29, 31, 35, 43, 44, 51, 60, 61, 64, 67, 77, 85, 90
F-Time	1	81	
	4	108	
F-Geom	2	83	
	8	79, 126	
F-SpT	1	74	
	2	105, 117, 121, 123	96

IPI Skill		I. T. B. S. Item Test A-1: Arithmetic Concepts	Test A-2: Arithmetic Problem Solving
G-Mult	4	104	
G-Div	4		93
	5	133	
G-COP	5		78, 88, 89, 94
G-Fract	2	100	
	3	98, 113	
	5		65, 70, 73, 79
G-Geom	3	122, 130	
	5	127	
	7	75	